DOCUMENT RESUME

ED 075 350 SP 006 265

AUTHOR	Smith, B. Othanel; Orlosky, Donald E.
TITLE	The Development of Protocol Materials. Acquiring Teacher Competencies: Reports and Studies.
INSTITUTION	National Center for the Development of Training Materials in Teacher Education, Bloomington, Ind.
SPONS AGENCY	National Center for Improvement of Educational Systems (DHEW/OE), Washington, D. C.
PUB DATE	Jan 73
NOTE	23p.; Report No. 3
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Audiovisual Instruction; *Concept Formation; *Instructional Materials; *Protocol Materials; *Teacher Education

ABSTRACT

The development of protocol materials from the standpoint of the developer is discussed in this article. Emphasis is placed on the selection of concepts, analysis of concepts, utility of concepts, and issues about the development and use of protocol materials. A three-item bibliography is included. (MJM)

ED 075350

Acquiring Teaching Competencies:

Reports and Studies

National Center for the Development of Training Materials in Teacher Education

SCHOOL OF EDUCATION

INDIANA UNIVERSTIY

BLOOMINGTON

FILMED FROM BEST AVAILABLE COPY

This series is published and distributed under the auspices of the National Center for the Development of Training Materials in Teacher Education. The National Center has been initiated and supported by a grant from the National Center for the Improvement of Educational Systems, U.S. Office of Education.

The primary objective of this publication series is to provide an outlet for theoretical, procedural, technical and evaluational reports and studies in the development of protocol and training materials, and in their use in the acquisition of teaching competencies.

The editorial advisory board functions primarily to set policy regarding directions and purposes of the publication and areas of needed publication. Editors for each report will be selected from those listed below.

Associates of the National Center at Indiana University

Laurence D. Brown
David Gliessman
Gary M. Ingersoll
W. Howard Levie
James R. Okey
Philip G. Smith
Richard L. Turner
James D. Walden

External Editorial Board Members

David Berliner
Far West Regional Educational Laboratory
Berkeley, California
Bryce B. Hudgins
Washington University
St. Louis Missouri
B. Othanel Smith
University of South Florida, Tampa, Florida

Manuscripts for consideration should be submitted to:

Laurence D. Brown
National Center for the Development of Training Materials in Teacher Education
School of Education
Indiana University
Bloomington, Indiana 47401

ED 075350

The Development of Protocol Materials

B. Othanel Smith and Donald E. Orlosky

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

Report #3, January, 1973

Foreword

The paper which this foreword introduces is an important one, both for the developer of protocol materials and the potential user. The paper is also sufficiently general in thrust that it could be of significance to anyone in the theoretical foundations of education as well as others in teacher education. It represents one of the first elaborations of the concept of protocol materials written by Professor B. Othanel Smith since he described the idea initially in *Teachers for the Real World.* The article clearly reveals certain of the realities encountered by the authors in their interaction with the producers of protocol materials. The experience of having wrestled with the problems of selecting and defining useful concepts around which to build protocol materials is strongly present.

According to Smith and Orlosky, the first problem is to determine the kind of conceptual domain from which the concept arises in the first place. Is it a common sense notion? Is it a category that exists within some ordered taxonomy? Does it exist as part of a nomothetic network? The next step is to analyze the concept, and the initial analysis is linguistic—always pushing toward the specification of observables as a part of the definition. A series of definitional forms are described and the implications, problems, advantages and disadvantages of each for the development of protocol materials are discussed. Following the linguistic analysis is an empirical analysis which leads to the kind of behavioral definition required for actual production.

It is interesting that the Hudgins article appearing in Report No. 1 of this series also deals with the preproduction phase in the development of protocol materials but differs from this article in quite interesting ways. Both deal with an analytic phase, but in the Hudgins article the linguistic portion is given brief consideration with the empirical phase dominant while in this article it is quite the reverse. It would be well worth the reader's time to read these articles together. I believe they will be found to be interestingly complementary and both highly valuable to the producer of protocol materials.

L. D. Brown, *Editor*

The Development of Protocol Materials

B. Othanel Smith and Donald E. Orlosky

University of South Florida

In this article, we shall consider the development of protocol materials from the standpoint of the developer. What questions must he consider? At what points must he make decisions and what should he take into account as he makes these decisions? This is the perspective from which this paper is written, but it is not assumed that the order of exposition is necessarily the order of empirical development. The sequence in which the various points are considered in this paper is not necessarily the order in which they would be taken up in the development of a protocol.

The Selection of Concepts

In order to begin his work, the developer must select an area in which he wishes to portray concepts. Let us assume that after taking into account a number of factors (for example, his interests, abilities and resources) he chooses to work with teacher-pupil interaction in the classroom at the junior high school level. He might choose a different grade level, a different setting (school, peer group, family, community) or a different source of behavior (teacher or pupil), but the level, setting and source of behavior are choices that narrow the eventual protocol material to a specific situation. The developer must then select the aspect of interaction for which he will prepare a protocol. Let us suppose that his interests, resources, etc., lead him to select classroom management and control as the specific aspect of teacher-pupil interaction on which he will concentrate.

The developer now knows the area of teacher preparation he is to focus upon, but he still does not know what he is to do in that area. Which way of conceptualizing the various classroom disruptions and problems of management and control should he select? Should he consider only the concepts that interpret the most frequent types of disruption? Or those which enable the teacher to diagnose the most serious disruptions? Should he emphasize those concepts which imply teacher control or those which lead to group control? How the developer answers these questions will depend upon the social and psychological orientation he brings to the task of developing protocols. But it makes little difference which point of view is taken by a particular developer, so long as the total range of protocols developed does not neglect significant concepts regardless of the orientation to which they belong.

However, there are considerations in the selection of concepts which place more restraint upon the developer. These are by implication included in the foregoing suggestions, but they are so basic to the development of a systematic program of teacher preparation that they should be given explicit attention. Concepts seldom stand alone in total isolation. They are usually related, or are relatable, to other concepts, forming some sort of conceptual network. The power and utility of a concept depends in part upon the network to which it belongs.

There are at least three kinds of conceptual networks found in educational literature. The first is a framework in which common sense identifies and relates concepts to each other either by psychological or material associations, although the concepts are vague and ambiguous and the associations are typically tenuous. There is a set of common-

sense concepts about classroom control, some members of which are still to be found in the literature of education as well as in educational practice. Among these are: rules, misbehavior, mischief, stubbornness, willfulness, violation, punishment and reward. These concepts constitute a loose system with which teachers think about classroom behavior. If a pupil breaks a rule, his misbehavior may be attributed to willfulness. In this system, such behavior is typically corrected by punishment such as denying privileges or the use of physical coercion.

The second kind of conceptual network is taxonomic. In a strict sense, a taxonomy is an ordering of phenomena by laws or principles. Plants and animals are arranged into phyla, species, etc., consonant with the theory of evolution. Diseases are classified in ways that facilitate diagnosis and treatment. No taxonomic system in education is as clear-cut as those in biology or medicine, nor are the principles of classification as law-like. But Bloom's taxonomy of educational objectives approximates the sort of order found in other fields, the objectives being arranged roughly according to the order of complexity and development.

To return to concepts of classroom management and control, is there a taxonomic example? A number of attempts have been made to classify discipline problems. Perhaps the most thorough effort is that of Kooi and Schutz (1965). Using the principles and techniques of factor analysis, they classified deviant acts into five classes: physical aggression, peer affinity, attention seeking, challenge of authority and critical dissension. If these categories are dependable, they can reduce the multiplicity of deviant acts to manageable categories. Only by viewing a given act as one of a kind can the teacher diagnose the discipline cases

in his class. If he were to attend to each as a unique case, the cognitive burden would be overwhelming. But once there is a dependable taxonomy of discipline cases, skills for dealing with each type can be worked out and teachers can be trained to perform the skills appropriate to it. The point of this analysis is that a taxonomy of disruptive behavior affords a basis for selecting concepts for which protocols can be developed. A number of protocols can be worked out for each of these five concepts, assuming them to be dependable, making it possible to teach prospective teachers to recognize a particular case as one of a kind.

The third conceptual network is one that makes possible the formulation of laws or law-like statements. This is a nomothetic system. An example is reinforcement theory. Among the concepts that make up this theory are: operant and respondent behavior, operant conditioning, respondent conditioning, extinction, positive reinforcer, generalization, primary reinforcement, secondary reinforcement and shaping. These concepts hang together in a theoretical network. By reference to operant behavior, positive and negative reinforcers, shaping, and so on, it is possible to formulate laws or law-like statements about how to change behavior. The following is an illustration: If reinforcers are withheld, a response already learned is extinguished. Applied to discipline problems, this law means that disruptive behavior becomes extinguished if it is not reinforced.

A nomothetic network has some advantages over the other two networks as a source of concepts. For one thing, its concepts more readily issue into "what to do statements" -- which lead into skills. For another, it reduces the burden of diagnosis. In reinforcement theory, for example, the system places emphasis upon two situations: those in which the be-

havior is to be reinforced and those where reinforcement is to be withheld. But even so, there is need for protocols to develop the ability to recognize kinds of behavior, types or reinforcers and so on.

To sum up, the selection of concepts entails at least two decision points: the categories in which concepts are to be selected and the particular concepts to be selected. To make these decisions, the protocol developer must consider not only his resources, interests and abilities, but also the significance of the concepts in the teacher's work. The significance of a concept cannot, however, be defined entirely in terms of the common-sense network of concepts teachers often find useful in trying to understand classroom problems. As a rule the common-sense network is less effective -- it yields fewer skills that result in desirable ends. The significance of a concept, therefore, may be more dependent on characteristics of the theoretical network to which it belongs.

This pattern of concept selection rules out the notion that an efficient mode of protocol development is to select an existing recording of behavior, usually made for another purpose, and then to search for concepts to interpret it. Instead of this approach, the developer should begin with clearly understood concepts and then develop situations that call out the behavior consistent with the concepts. To do otherwise has usually proven unproductive for a variety of reasons, a number of which are treated later in this paper.

The Analysis of Concepts

Once concepts have been decided upon, the developer of protocols must analyze them. Otherwise, he will not know what to depict in recordings of behavior. This is perhaps the most crucial task that the devel-

oper will face, for how well he performs it will largely determine the quality of his protocols. How does one go about analyzing a concept? It is an abstraction and can neither be pointed to nor taken apart as a specimen in a laboratory.

To analyze a concept is to find out what is designated by the name of the concept. If the analysis is to be useful in developing protocols, it must be pushed to the level of observables. The analysis cannot be left at the level of such abstractions as conditions, states and other forms of being. Motivation, for example, cannot be defined as an incentive, and yet be useful in developing protocols. The analysis must be pursued until the objects or events encompassed by the concept are identified, and the attributes characterizing it are identified. Perhaps the first step in reducing the concept to an observable form is to express it in a linguistic form. The concept is thus reduced to a set of verbal meanings that can guide the search for the observable form embraced by the concept.

Not all concepts are of the same order, and different definitional forms are necessary to account for the variety of concepts that can be portrayed in protocol materials. For the purpose of developing protocols, it is suggested that concepts be expressed in one of four possible forms: classification form, equivalent-expression form, open-context form and conditional form.

The classification form of a definition provides for a concept to be associated with a category, and to be distinguished from other concepts by discriminating criteria. For instance, a teacher behavior such as explaining can be set apart from other teacher behaviors such as defining by establishing the criteria that are necessarily present when explaining

is going on. The distinguishing element for explaining would include the criterion that the teacher is always trying to account for a given effect. Additional qualifying criteria that are necessary to distinguish explaining from defining would be added until the limits of explaining are drawn.

In the equivalent-expression form, a concept is set forth by providing an expression that is equivalent to the word or words used to name that concept. A series of qualifying criteria, such as those used in the classification form, cannot be developed for relational concepts such as the intelligence quotient. The concept of intelligence quotient can be expressed by using the equivalent-expression form and calling it "the ratio of mental age to chronological age times 100." One could then say in regard to an intelligence test: "'A converted score on the test is an intelligence quotient', is equivalent to saying, 'A converted score on the test is the ratio of mental age to chronological age times 100.'"

The open-context form provides a means of expressing concepts whose definitions are imprecise because the boundaries of the terms are not rigidly limited. When the limits of a term cannot be determined, it is a temptation to avoid the definition and to consider the term undefinable. Sovereignity, freedom, democracy and happiness are examples of loose terms that cannot be reduced to an equivalent-expression form, or to a classification form, without finding exceptions to the definition or restricting the definition to unreasonable limits. In these cases, it is preferable to include the defining characteristics in the open-context form. A definition in this form may be stated as follows: Happiness is characterized by smiling, being physically relaxed, expressing

contentment with physical and social surroundings, describing the future with positive anticipation, etc.

The interpretation of behavior may vary according to the conditions that precede the behavior. In such instances, the conditions are a part of the definition of a term, and the conditional form is appropriate. If an individual is breathing heavily and perspiring, the interpretation of his behavior depends on the conditions preceding the behavior. If the individual has just completed vigorous activity in a physical education class, or if the individual is about to attend a difficult examination whose results are critical, we may label the same behavior (i.e. breathing heavily and perspiring) as fatigue or anxiety, according to the conditions accompanying the event. Some concepts can only be expressed within the context of the conditions in which they occur.

The definition of a term is undertaken in order to ascribe certain meanings to the concept and to get others to use the concept with the same meanings. It is the task of the developer of protocols to choose the words that express the concept and then to utilize the appropriate linguistic form to sharpen his definition. When comparing the initial written definition with a given linguistic form, it is likely that modification of the initial statement will become necessary. The linguistic form that is most appropriate will depend on the nature of the concept and it is only through writing the features and characteristics of a concept that the appropriate form becomes known. One should express concepts in the most precise linguistic form, but completeness and accuracy should not be sacrificed. The overriding concern in a definition is the clarity with which the concept is analyzed and the clarity with which that analysis is communicated to others.

As an example of the use of definitions in developing protocols let us look again at classroom management and control. Suppose that in the taxonomic scheme of Kooi and Schutz the protocol developer wishes to prepare protocols on "attention seeking" as a form of disruptive behavior. What does he do? The first thing perhaps is to review the literature for characteristics of attention seeking behavior. He will doubtless find that this form of disruption is expressed in a number of ways such as asking silly questions and making silly remarks. These are attributes of behavior which the developer may express in a definition. He may begin by supposing that a classificatory definition is appropriate, and define attention seeking as an emotional state in which the individual makes wisecracks, silly remarks and unnecessary and unusual noises.

But he will encounter troubles with this form. For one thing, what is an emotional state? Is it a class of things for which distinct instances can be identified? Or is it a construct that carries little or no "freight"? For another thing, there are other acts such as seizing and hiding property of others that may indicate attention seeking. How many additional acts can be identified is difficult to forecast. Furthermore, attention seeking is clearly not a relational concept, and, hence, not likely to fit into the equivalent-expression form. Nor do there appear to be accompanying conditions that vary the behavior and limit its interpretation, as in the case of frustration. So, it looks as if an open-context definition might be appropriate. It can be stated as follows: Attention seeking is characterized by making unnecessary and unusual noises, wisecracks and silly remarks; asking silly questions, making funny faces, etc. The definition is now open for additional attributes, and the abstract expression "emotional state" which serves no pur-

pose is no longer in the picture.

A verbal analysis of a concept is not the same thing as an empirical analysis. If it were, the development of protocols would be relatively simple. As indicated above, the developer must pursue the analysis to a behavioral situation that exemplifies the concept. After he has attained a fair degree of verbal clarity, his task is then to contrive a situation that elicits the behavior called for by his definition. At this point, his difficulty will center on the question of how to tell whether or not the behavior actually called out by the situation exemplifies the attributes which the definition specifies.

This point becomes clear when it is recognized that an attribute (silly question, taking another's property, etc.) always occurs in a context of many other acts that can, and typically do, blur the distinctiveness of the attributes in question. The distracting acts may be so noisy that an untrained observer cannot tell which act is the attribute. He observes so many things happening concurrently that he may become confused and observe all sorts of irrelevant happenings and make all sorts of interpretations of the protocol. To increase the pedagogical utility of the protocol, the developer must control the number of variables in a given situation. This calls for simple situations that clearly depict the relevant attributes or the use of pointers in the protocol to indicate the attributes, or both.

Moreover, it may be difficult to tell whether or not the attribute is genuine. For instance, a student may make a silly utterance without intending to do so and is not thereby seeking attention. How is the developer of the protocol to tell? Of course, if he stages the situation, the question hardly arises. But an independent observer will not know

the circumstances, as the developer does, and can assess the student's motives only from the behavior. If he cannot tell whether or not the remark just happened to be silly, he is hardly in a position to interpret the behavior. What cues must the developer build into the protocol to avoid this sort of quandary? The answer will vary from one protocol situation to another, but in general there must be enough disruptive behavior for the observer to form a network of observations that make possible inferential connections from one act to another.

In summary, the breakdown of a concept into its constituent parts comprises three operations: a verbal step that leads to the formulation of a definition of the concept, a substantive analysis that consists in the reduction of the definition to a behavioral situation and a further step that consists in the identification of attributes that represent the concept. These are interrelated operations and the order of their performance can vary from one protocol to another.

The Utility of Concepts

The utility of concepts is less important in the development of protocols than in the use of protocols in teacher education. For this reason, the various uses of concepts should be treated and illustrated in a guide to accompany a set of protocols. To understand the use of concepts is to understand the purposes they can serve. Only if the teacher educator is aware of these purposes can he show the significance of concepts to the prospective teacher or to the teacher in service. From such a demonstration of utility the teacher in training can learn to appreciate as well as understand the role of educational theory in his work.

What then are the uses of concepts? First of all, concepts are used to tell whether or not a given event, object, act, etc., is one of a kind.

In an elementary sense this is what is meant by interpretation or diagnosis. If one encounters a strange event or act, or one which resembles others so closely that is is difficult to tell which it is, he knows what it is when he can classify it. As soon as he sees that it is one of this or that kind of thing, he has diagnosed what it is. He can then be said to have interpreted it; or if the event, act, condition, etc., is abnormal, we say he has diagnosed it if he tells what kind it is. The process of classifying is one of the ways, perhaps the chief way, in which the unknown is assimilated to the known. Without concepts this process would not occur.

To recur to the theme of classroom management and control, suppose that a student throws an object and subsequently wanders around the room. How are these actions to be understood? They could be indications of either attention seeking or "critical dissension." The teacher will not understand these acts correctly unless he is able to classify them correctly. If these actions are associated with others that are clearly in the category of attention seeking, the teacher is apt to be correct if he classifies these actions in that category also. On the other hand, they are apt to be signs of critical dissension if they occur in a context of other acts that clearly belong to this particular class. In any event, the teacher understands behavior by classifying it, and the accuracy of his categorizing will determine the correctness of his understanding, and partly the adequacy of the subsequent treatment.

Another use of concepts is to guide the formulation and choice of means and ends. The teacher is constantly trying to maneuver from one situation to another, and the maneuver entails means-ends relationships -- that is, actions designed to attain a particular end. Such an action is

a complex operation consisting of four elements: an end, means, conditions and norms. The end is a state of affairs toward which the action is intended to alter. The means are those aspects of the conditions over which the teacher has control and which he incorporates in the action. In any situation there is always more than one means available. From among these alternatives the teacher must choose, and his choice will necessarily entail, at least implicitly, the use of norms. This analysis characterizes in general the framework in which a teacher operates from moment to moment. In actual fact, he typically is not aware of this framework of decision making. Events occur too rapidly and vanish too quickly for the teacher to make such an analysis. But if he has a dependable conceptual system that has become second nature to him, he will make appropriate decisions almost automatically when they are needed. Reduced to its lowest terms, the teacher's behavior takes this simple form: perceive x, do y to get z.

To recur again to the theme of classroom management and control, the teacher may interpret the condition in which he finds himself as one in which the disruptive behavior stems from the pupil's need for recognition. The end is then conceptualized as a state of affairs in which the pupil's need for attention is being satisfied. To move from one of these states to another, the teacher can choose among a number of means. His choices will entail the use, at least implicitly, of norms or value concepts. For example, he can put the disruptive pupil in a leadership role in a group situation, or ask him to make a special report to the class, or to do any number of other things that add to his status in the class. The choice of means will depend not only upon his ability to see alternatives and his understanding of the characteristics of the pupil,

but also upon his view of the relative worth of the alternative means in the educative process.

The third use of concepts, foreshadowed in the preceding paragraphs, is to make predictions. Predictions are more easily made, and are made with more security, with concepts that hang together as a system, for a system facilitates logical deduction which is basic to predictions. In its most primitive form a system of concepts consists in tenuous psychological associations. Cold war, red, Russia, radical, and communism are associated psychologically. To think of one is to call up another: red suggests radical, radical suggests communism, communism suggests Russia and Russia suggests cold war. There is no inherent order of these associations and no logical connection among these terms. Thought moves from one term to another not by deduction, but simply by one term calling up another by association. The closer the concepts of education come to this type of associative system, the more worthless they are as a basis for valid inference and prediction. Serious educational thought does not rest upon mere association of ideas. But under the pressure of classroom events calling for quick decisions, the teacher's thinking may regress to that level more often than is generally believed. To safeguard decision making in the classroom against this sort of associative thinking is one of the purposes of teacher preparation based on the use of protocol materials.

More significantly, concepts are related to one another logically. As noted earlier, the logical relations may be loose, as in traditional wisdom where the terms are apt to be vague and ambiguous. But in taxonomic systems the logical relations can be more rigorous, and even more so in a nomothetic system. In these systems, inferences are more apt to be valid. If X is platinum, it can be dissolved by putting it in <u>aqua</u>

regia. Platinum as a substance bears the material relation dissolves in to the substance aqua regia. But with far more care than can be taken here, the concept of platinum can also be related logically to the concept of aqua regia so that the proposition "platinum dissolves in aqua regia" can be derived. By the same token, if a student is an attention seeker, his conduct becomes constructive by satisfying his need for attention. Here attention seeking and recognition are related in ways contrary to common sense. According to traditional wisdom, the attention seeker would be punished for his disruptive conduct instead of being ingratiated by giving him a prestigious task to perform.

Issues About the Development and Use of Protocols

Certain issues about the development and use of protocols have arisen from time to time. Some of these should be considered because the way they are resolved will affect either the use or the nature of protocols, or both.

Some developers as well as users of protocols insist that protocols must be used inductively in the teaching of concepts. They would have a protocol presented to students who would in turn arrive at the appropriate concept by induction from the events exhibited in the protocol itself. Others hold the view that the instruction should be didactic; that the important thing is that the concept is learned. Advocates of the didactic approach hold that even simple protocols are so complex that the student is likely to spend an undue amount of time and to deal with many irrelevant matters in the absence of direct guidance by an instructor. They would have the instructor "set the stage" by indicating the concept to be learned and then analyzing it. The protocol would then be viewed and the student and teachers would discuss the interpretation of it, noting the attributes and how they are identified. Naturally there are variations

of these two approaches, but, on the whole, the foregoing description covers the essentials of each approach at the operational level.

This issue may turn out to be false. For one thing, neither research nor theory lends support to the sort of naive distinctions ordinarily made between heuristics and didactics.[1] There is reason to suppose that these two approaches to learning, if they are distinct, are complementary. There is little evidence to support the view that search alone leads to discovery. Had Aristotle tried all of his life to construct an airplane, he would in all probability have failed. The bits of knowledge necessary to the invention were simply not in his culture. When the knowledge instrumental to a discovery is not known by the searcher, discovery is unlikely. Furthermore, the searcher may not know the procedures to follow in making the discovery. The searcher is then likely to fail also. The learner who possesses the requisite knowledge and procedures is more often the one who succeeds. Whether these are acquired didactically or heuristically apparently makes no difference. For another thing, the research evidence on the relative effects of these two approaches upon student achievement lends no weight to the view that either one is superior to the other.

A number of issues have to do also with the development of protocols. One of these pushes the issue of didactics and heuristics into the production phase. A few developers insist that protocols can be developed effectively by first recording behavior and then searching for a concept to interpret it. Other developers insist with equal conviction that one

---

[1] See "A concept of heuristics" by F.J. Mc Donald in Smith (1971). Also Learning by Discovery: A Critical Appraisal, edited by Shulman and Keisler (1966).

should know first all of the concept to be learned and then contrive protocols to teach that concept. Assuming two protocols of equal merit, one developed inductively and the other deductively, could an observer tell how each was developed? It would seem unlikely that anyone could tell the difference. The issue boils down in part to the question of which is the most efficient way to develop protocols and in part to the question of whether protocols inductively developed can be equal in merit to those developed deductively. Finally, it should be pointed out that ultimately protocols must be developed to cover a catalog of concepts. This task will require systematic planning, and it is questionable that the intuitive approach to development can meet the demands of a systematic plan without extensive waste of time and materials.

A subordinate issue hinges on the question of whether "to stage or not to stage" the protocol. Some developers hold that protocols should be a segment of real life -- behavior that occurs naturally in the course of unplanned events. Others hold with equal conviction that staging offers decided advantages and no disadvantages compared to real life situations. Staging, among other things, allows the control of distractions and coordination between the behavior and what the concept specifies. Insistent demands for real life situations are perennial. The question is not "How real is the situation?" It is whether or not an observer can tell a staged protocol from a real life protocol. This is an empirical question. But it is likely that the distinction would be so blurred that an observer could not tell the difference. Furthermore, the main question is whether or not the protocol facilitates the acquisition of the appropriate concept. If staged protocols do, this subordinate issue would have little to commend it as a point of discussion.

One of the pressing issues concerns the criteria for the selection of concepts. Some aspects of this question have been dealt with in earlier paragraphs. The point of emphasis here is how close a concept should be, by inference, to skills. It was noted earlier that some concepts imply skills of teaching, at least weakly. For example, the concept of reinforcement has direct implications for teaching behavior. On the other hand, upper social class, as a concept, has such feeble implications, if any at all, that one is not clear what teaching behavior can be inferred from it. Some developers hold that only concepts that imply skills should be selected for protocol development, while others take the opposite view contending that such a criterion is too restrictive.

In considering this issue, it should be remembered that skills do not exhaust the repertoire of learnings that a teacher uses. He has attitudes toward his pupils, his content field, or himself or his subject helps to shape his attitudes. If he classifies a student who is constantly unruly as incipiently sick, his attitude toward the student will be different from what it would be were he to classify him as criminally inclined or "downright mean." Furthermore, a teacher's self concept will affect his use of skills, although it implies no skills. Protocols can be developed for teaching concepts that affect attitudes just as easily as they can be developed as a prelude to skills. Both are important.

References

Kooi, B. and Schutz, R. A factor analysis of classroom disturbance intercorrelations. American Educational Research Journal, 1965, 2, 37-40.

McDonald, F.J. A concept of heuristics. In B.O. Smith (Ed.), Research in teacher education. Englewood Cliffs, N.J.: Prentice-Hall, 1971. Pp. 73-81.

Shulman, L. and Keisler, E. (Eds.) Learning by discovery: A critical appraisal. Chicago: Rand Mc Nally, 1966.